

## **APPENDIX I**

### **GENERATING STATION CONSTRUCTION ACTIVITY AMBIENT AIR QUALITY IMPACT ANALYSIS**

- **Emission Parameters**
- **Significant Change In Air Quality**
- **Ambient NO<sub>2</sub> Analysis**
- **Ambient CO Analysis**
- **Ambient PM<sub>10</sub> Analysis**
- **Ambient PM<sub>2.5</sub> Analysis**
- **Ambient SO<sub>2</sub>/Sulfate Analysis**
- **Summary of Air Quality Analysis**

**Air Quality Impact Analysis - Emission Parameters**  
**Construction Emissions**  
**Riverside ERC**

**Equipment Information:**

Equipment Type: Construction Operations	Capacity: -	Fuel: Diesel
Manufacturer:	Output (MW): na	HHV:
Model:	# of Units: 1	

**Emission Rates:**

Pollutant	Per Unit Emission Rate (lbs/hr)	Total Emission Rate (lbs/hr)	Total Emission Rate (g/s)		Comments
NO <sub>x</sub>	7.54	7.54	0.95	1-Hour	
NO <sub>x</sub>	7.54	7.54	0.95	Annual	
CO	3.81	3.81	0.48	1-Hour	
CO	3.81	3.81	0.48	8-Hour	
PM <sub>10</sub>	2.15	2.15	0.27	24-Hour	
PM <sub>10</sub>	0.89	0.89	0.11	Annual	
PM <sub>2.5</sub>		0.00	0.00	24-Hour	
PM <sub>2.5</sub>		0.00	0.00	Annual	
SO <sub>x</sub>	0.01	0.01	0.00	1 hour / 3-Hour	
SO <sub>x</sub>	0.01	0.01	0.00	24-Hour	

Emission rates on this page exclude the cooling tower because PM rates are not normalized.

**Air Quality Impact Analysis - Significant Change In Air Quality  
Construction Emissions  
Riverside ERC**

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**Air Quality Impact Analysis:**

Pollutant	Averaging Time	Emission Rate (g/sec)	Maximum Impact (ug/m <sup>3</sup> )	SCAQMD Significant Change In Air Quality Threshold (ug/m <sup>3</sup> )	
				In Air Quality Threshold	SCAQMD Significant Change In Air Quality Threshold
NO <sub>2</sub>	1 - Hour	0.95	<b>1019.81</b>	<b>20.0</b>	
NO <sub>2</sub>	Annual	0.95	<b>16.70</b>	<b>1.0</b>	
CO	1 - Hour	0.48	<b>513.28</b>	<b>1100.0</b>	
CO	8 - Hour	0.48	<b>128.97</b>	<b>500.0</b>	
PM	24 - Hour	0.11	<b>16.9720</b>	<b>2.5</b>	
PM <sub>10</sub>	Annual*	0.11	<b>0.4141</b>	<b>1.0</b>	
PM <sub>2.5</sub>	24 - Hour	0.00	<b>N/A</b>	<b>N/A</b>	
PM <sub>2.5</sub>	Annual	0.00	<b>N/A</b>	<b>N/A</b>	
Sulfate	24-Hour	0.00	<b>0.1115</b>	<b>N/A</b>	
SO <sub>2</sub>	1 - Hour	0.00	<b>1.1013</b>	<b>N/A</b>	
SO <sub>2</sub>	24-Hour	0.00	<b>0.1115</b>	<b>N/A</b>	

\*Annual Dispersion model results are scaled to reflect lower average hourly emissions over the duration of the project.

**Note:**

- X/Q Max values (ug/m<sup>3</sup>/g/sec) are taken from the ISC 3 model.
- Impacts analysis utilized the standard stack release parameters.

**Air Quality Impact Analysis - Ambient NO<sub>2</sub> Analysis**  
**Construction Emissions**  
**Riverside ERC**

**1-Hour NO<sub>2</sub> Analysis:**

1. Convert NO<sub>2</sub> 1-hour project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

ppm NO<sub>2</sub> = ( $\mu\text{g}/\text{m}^3$ ) (0.0245/NO<sub>2</sub> MW)

Where:

NO <sub>2</sub> 1-Hour $\mu\text{g}/\text{m}^3$ :	1019.8	OLM Ratio	0.11
NO <sub>2</sub> MW:	46.0	(Valid only for construction impacts)	
Conversion:	0.0245	(based upon 200 meter distance to MEI)	

So:

ppm NO <sub>2</sub> =	0.0619
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2. Add NO<sub>2</sub> 1-hour background ambient data to projects modeling impacts.

ppm NO<sub>2</sub> = (projects modeling impacts + background ambient data)

Where:

Projects modeling impacts (ppm):	0.062	Station 4144 - Rubidoux - Year 2001
Ambient background data (ppm):	0.15	

So:

Project + Background (ppm):	0.21
Most Stringent NO <sub>2</sub> 1-Hour Standard (ppm):	0.25

**Annual NO<sub>2</sub> Analysis:**

1. Convert annual project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

ppm NO<sub>2</sub> = ( $\mu\text{g}/\text{m}^3$ ) (0.0245/NO<sub>2</sub> MW)

Where:

NO <sub>2</sub> 1-Annual $\mu\text{g}/\text{m}^3$ :	16.70	OLM Ratio	0.59
NO <sub>2</sub> MW:	46.0		
Conversion:	0.0245		

So:

ppm NO <sub>2</sub> =	0.00525
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2. Add NO<sub>2</sub> annual background ambient data to projects modeling impacts.

ppm NO<sub>2</sub> = (projects modeling impacts + background ambient data)

Where:

Projects modeling impacts (ppm):	0.00525	Station 4144 - Rubidoux - Year 1999
Ambient background data (ppm):	0.0262	

So:

Project + Background (ppm):	0.0314
Most Stringent NO <sub>2</sub> Annual Standard (ppm):	0.0534

**Air Quality Impact Analysis - Ambient CO Analysis**  
**Construction Emissions**  
**Riverside ERC**

**1-Hour CO Analysis:**

1. Convert CO 1-hour project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

$$\text{ppm CO} = (\mu\text{g/m}^3) (0.0245/\text{CO MW})$$

Where:

CO 1-Hour $\mu\text{g/m}^3$ :	513.3
CO MW:	28.0
Conversion:	0.0245

So:

$$\text{ppm CO} = 0.4491$$

2. Add CO 1-hour background ambient data to projects modeling impacts.

$$\text{ppm CO} = (\text{projects modeling impacts} + \text{background ambient data})$$

Where:

Projects modeling impacts (ppm): 0.449	
Ambient background data (ppm): 11.0	Station 4146 - Riverside- Magnolia - 1997

So:

Project + Background (ppm): 11.45	
Most Stringent CO 1-Hour Standard (ppm): 20.0	

**8-Hour CO Analysis:**

1. Convert annual project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

$$\text{ppm CO} = (\mu\text{g/m}^3) (0.0245/\text{CO MW})$$

Where:

CO 8-Hour $\mu\text{g/m}^3$ :	129.0
CO MW:	28.0
Conversion:	0.0245

So:

$$\text{ppm CO} = 0.113$$

2. Add CO 8-Hour background ambient data to projects modeling impacts.

$$\text{ppm CO} = (\text{projects modeling impacts} + \text{background ambient data})$$

Where:

Projects modeling impacts (ppm): 0.113	
Ambient background data (ppm): 5.8	Station 4144 - Rubidoux - 1997

So:

Project + Background (ppm): 5.91	
Most Stringent CO 8-Hour Standard (ppm): 9.0	

**Air Quality Impact Analysis - Ambient PM<sub>10</sub> Analysis**  
**Construction Emissions**  
**Riverside ERC**

**24-Hour PM<sub>10</sub> Analysis:**

1. Add PM<sub>10</sub> 24-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ( $\mu\text{g}/\text{m}^3$ ): 16.972

Ambient background data ( $\mu\text{g}/\text{m}^3$ ): 164.0      Station 4144 - Rubidoux - 2003

So:

Project + Background ( $\mu\text{g}/\text{m}^3$ ): 181.0

Most Stringent PM<sub>10</sub> 24-Hour Standard ( $\mu\text{g}/\text{m}^3$ ): 50.0

**Annual PM<sub>10</sub> Analysis:**

1. Add PM<sub>10</sub> Annual background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ( $\mu\text{g}/\text{m}^3$ ): 0.414

Ambient background data ( $\mu\text{g}/\text{m}^3$ ): 72.3      Station 4144 - Rubidoux - 1999

So:

Project + Background ( $\mu\text{g}/\text{m}^3$ ): 72.71

Most Stringent PM<sub>10</sub> Annual Standard ( $\mu\text{g}/\text{m}^3$ ): 30.0

**Air Quality Impact Analysis - Ambient PM<sub>2.5</sub> Analysis**  
**Construction Emissions**  
**Riverside ERC**

**24-Hour PM<sub>2.5</sub> Analysis:**

1. Add PM<sub>2.5</sub> 24-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ( $\mu\text{g}/\text{m}^3$ ): N/A

Ambient background data ( $\mu\text{g}/\text{m}^3$ ): 119.6      Station 4144 - Rubidoux - Year 2000

So:

Project + Background ( $\mu\text{g}/\text{m}^3$ ): #VALUE!

Most Stringent PM<sub>2.5</sub> 24-Hour Standard ( $\mu\text{g}/\text{m}^3$ ): 50.0

**Annual PM<sub>2.5</sub> Analysis:**

1. Add PM<sub>2.5</sub> Annual background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ( $\mu\text{g}/\text{m}^3$ ): N/A

Ambient background data ( $\mu\text{g}/\text{m}^3$ ): 31.1      Station 4144 - Rubidoux - Year 2001

So:

Project + Background ( $\mu\text{g}/\text{m}^3$ ): #VALUE!

Most Stringent PM<sub>2.5</sub> Annual Standard ( $\mu\text{g}/\text{m}^3$ ): 30.0

**Air Quality Impact Analysis - Ambient SO<sub>2</sub> / Sulfate  
Construction Emissions  
Riverside ERC**

**24-Hour Particulate Sulfate Analysis:**

1. Add SOx 24-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts ( $\mu\text{g}/\text{m}^3$ ): 0.11  
Ambient background data ( $\mu\text{g}/\text{m}^3$ ): 11.7      Station 4144 - Rubidoux - Year 2002

So:

Project + Background ( $\mu\text{g}/\text{m}^3$ ): 11.81  
Most Stringent SO<sub>2</sub> 24-Hour Standard ( $\mu\text{g}/\text{m}^3$ ): 25.0

**1-Hour SO<sub>2</sub> Analysis:**

1. Convert SO<sub>2</sub> 1-hour project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

ppm SO<sub>2</sub> = ( $\mu\text{g}/\text{m}^3$ ) (0.0245/SO<sub>2</sub> MW)

Where:

SO<sub>2</sub> 1-Hour  $\mu\text{g}/\text{m}^3$ :            1.101  
SO<sub>2</sub> MW:                        64.0  
Conversion:                    0.0245

So:

ppm SO<sub>2</sub>=                    0.000422

2. Add SOx 1-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts (ppm): 0.000422  
Ambient background data (ppm): 0.11      Station 4144 - Rubidoux - Year 2000

So:

Project + Background (ppm): 0.11  
Most Stringent SO<sub>2</sub> 24-Hour Standard (ppm): 0.25

**24-Hour SO<sub>2</sub> Analysis:**

1. Convert SO<sub>2</sub> 24-hour project modeling impact results to ppm for ambient analysis (ambient standards are in ppm).

ppm SO<sub>2</sub> = ( $\mu\text{g}/\text{m}^3$ ) (0.0245/SO<sub>2</sub> MW)

Where:

SO<sub>2</sub> 24-Hour  $\mu\text{g}/\text{m}^3$ :            0.112  
SO<sub>2</sub> MW:                        64.0  
Conversion:                    0.0245

So:

ppm SO<sub>2</sub>=                    0.000043

1. Add SOx 24-Hour background ambient data to projects modeling impacts.

Where:

Projects modeling impacts (ppm): 0.00004  
Ambient background data (ppm): 0.041      Station 4144 - Rubidoux - Year 2000

So:

Project + Background (ppm): 0.041  
Most Stringent SO<sub>2</sub> 24-Hour Standard (ppm): 0.040

**Air Quality Impact Analysis - Summary of Ambient Air Quality Analysis**  
**Construction Emissions**  
**Riverside ERC**

**Ambient Air Quality Analysis:**

Pollutant	Averaging Time	Project Impacts	Ambient Background	Year of Maximum Background	Total Impacts (Project + Ambient)	Ambient Standard
NO <sub>x</sub>	1 - Hour (ppm)	0.062	0.15	2001, Rubidoux	0.212	0.25
NO <sub>x</sub>	Annual (ppm)	0.00525	0.03	1999, Rubidoux	0.03	0.0534
CO	1 - Hour (ppm)	0.449	11.0	1997, Riverside Magnolia	11.4	20.0
CO	8 - Hour (ppm)	0.113	5.8	1997, Rubidoux	5.9	9.0
PM	24 - Hour ( $\mu\text{g}/\text{m}^3$ )	16.97	164.0	2003, Rubidoux	181.0	50.0
PM <sub>10</sub>	Annual ( $\mu\text{g}/\text{m}^3$ )	0.41	72.30	1999, Rubidoux	72.71	20.0
PM <sub>2.5</sub>	24 - Hour ( $\mu\text{g}/\text{m}^3$ )	N/A	119.6	2000, Rubidoux	N/A	65.0
PM <sub>2.5</sub>	Annual ( $\mu\text{g}/\text{m}^3$ )	N/A	31.10	2001, Rubidoux	N/A	12.0
Sulfate	24 - Hour ( $\mu\text{g}/\text{m}^3$ )	0.11	11.700	2002, Rubidoux	11.81	25.00
SO <sub>2</sub>	1-hour (ppm)	0.00042	0.110	2000, Rubidoux	0.11	0.25
SO <sub>2</sub>	24-hour (ppm)	0.0000	0.041	2000, Rubidoux	0.04	0.04